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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,807	02/25/2004	Hui-Mei Chen	MEG02-005	3341
<div>7590 GEORGE O. SAILE 28 DAVIS AVENUE POUGHKEEPSIE, NY 12603</div>			<div>EXAMINER AU, BAC H</div>	
			<div>ART UNIT 2822</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 10/05/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/786,807	Applicant(s) CHEN ET AL.	
	Examiner Bac H. Au	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15,17,27 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15,17,27 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment dated June 25, 2007 in which claims 15 and 27 were amended has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 27 and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The un-described subject matter is "a side wall discontinuously joined with said top surface" in line 5 of claim 27.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 27 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by "a side wall discontinuously joined with said top surface" in line 5 of claim 27. When something is

joined, it would appear apparent that it would not be discontinuous; otherwise, it would not be joined. For the purpose of this Office Action, the limitation will be interpreted as "a sidewall joined with said top surface".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15, 17, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsukamoto (U.S. Pat. 5554859) in view of Dass (U.S. Pat. 6162652).

Regarding claims 15, 17, 27, and 30, Tsukamoto [Figs.3A-B] discloses

a method for fabricating a circuit component, comprising:

providing a semiconductor wafer [3001] and a gold bump or pad [3007; col.19

lines 17-20] over said semiconductor wafer;

cleaning said gold bump or pad, wherein said cleaning said gold bump or pad comprises ion milling;

wherein said ion milling comprises using argon [Col.19 lines 22-23];

a method for fabricating a circuit component, comprising:

forming a patterned metal bump [3007] over a semiconductor wafer, wherein said patterned metal bump has a top surface and a side wall joined with said top surface;
and

cleaning said patterned metal bump, wherein said cleaning said patterned metal bump comprises ion milling [Col.19 lines 22-23];

wherein said ion milling comprises using argon [Col.19 lines 22-23].

Tsukamoto fails to explicitly disclose contacting said gold bump or pad; patterned metal bump; with a testing probe. However, Dass [Fig.17] discloses contacting said gold bump or pad; patterned metal bump; with a testing probe.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Dass into the method of Tsukamoto to include contacting said gold bump or pad; patterned metal bump; with a testing probe. The ordinary artisan would have been motivated to modify Tsukamoto in the manner set forth above for at least the purpose of carrying out functionality testing of the circuit component [Dass; col.1 lines 10-12].

5. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dass (U.S. Pat. 6162652) in view of Chen (U.S. Pub. 2003/0006271) and Lin (U.S. Pub. 20020127836).

Regarding claims 15, and 17, Dass [Figs.7-17] discloses

a method for fabricating a circuit component, comprising:

providing a semiconductor wafer [100; col.1 lines 10-12] and a bump or pad [150] over said semiconductor wafer;

cleaning said bump or pad [Col.7 lines 59-67];

contacting said bump or pad with a testing probe [Fig.17].

Dass fails to disclose the bump or pad is made of gold and that the cleaning of said gold bump or pad comprises ion milling. However, Chen discloses a gold bump or pad [307]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Chen into the method of Dass to provide a gold bump or pad. The ordinary artisan would have been motivated to modify Dass in the manner set forth above for at least the purpose of having a material that is highly conductive and resistant to corrosion [Chen; para.2].

Chen discloses cleaning said gold bump or pad by plasma cleaning with argon, but fails to explicitly disclose the cleaning comprising ion milling using argon. However, Lin [Para.63] discloses wherein said cleaning said gold bump or pad comprises ion milling; and wherein said ion milling comprises using argon. Because both references teach methods of cleaning with ions, it would have been obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of having an effective method of cleaning metal surfaces.

6. Claims 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Pub. 2003/0006271) in view of Dass (U.S. Pat. 6162652) and Lin (U.S. Pub. 20020127836).

Regarding claims 27 and 30, Chen discloses a method for fabricating a circuit component, comprising:

forming a patterned metal bump [307] over a semiconductor wafer [obvious], wherein said patterned metal bump has a top surface and a side wall joined with said top surface; and

cleaning said patterned metal bump.

Chen discloses cleaning said gold bump or pad by plasma cleaning with argon, but fails to explicitly disclose the cleaning comprising ion milling using argon. However, Lin [Para.63] discloses wherein said cleaning said gold bump or pad comprises ion milling; and wherein said ion milling comprises using argon. Because both references teach methods of cleaning with ions, it would have been obvious to one skilled in the art to substitute one method for the other to achieve the predictable results of having an effective method of cleaning metal surfaces.

Chen fails to disclose contacting said patterned metal bump with a testing probe. However, Dass [Fig.17] discloses contacting said patterned metal bump with a testing probe.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Dass into the method of Chen to include contacting said patterned metal bump with a testing probe. The ordinary artisan would have been motivated to modify Dass in the manner set forth above for at least the purpose of carrying out functionality testing of the circuit component [Dass; col.1 lines 10-12].

Response to Arguments

7. Applicant's arguments filed June 25, 2007 have been fully considered but they are not persuasive. Applicant states that the ion milling process of Tsukamoto does not disclose the claimed cleaning limitation since a cleaning process removes contaminants but does not remove an extraneous portion of the underlying structure. This is respectfully traversed. The ion milling process of Tsukamoto removes extraneous undesired gold layer, which would inherently remove micro contaminants from the patterned contact point or metal bump. Consequently, the ion milling process of Tsukamoto does disclose cleaning the patterned contact point or metal bump. Additionally, the claims are not so limiting.

Applicant's arguments with respect to the added limitation of contacting bump with a testing probe have been considered but are moot in view of the new ground(s) of rejection. Overall, applicant's arguments are not persuasive. The claims stand rejected and the Action is made Final.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

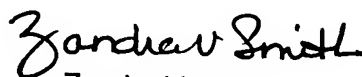
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bac H. Au whose telephone number is 571-272-8795. The examiner can normally be reached on Mon-Fri 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BHA


Zandra V. Smith
Supervisory Patent Examiner
30 Sept. 2007